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ABSTRACT

This second of a series of papers evaluating the Parent/Child Program describes the procedure used to decide whether the nine toys and their accompanying learning episodes are appropriate for use by young children in the Parent/Child context. Parents in four courses (Preliminary and Performance Test Situations) were given instructions on how to present the toys and the associated learning experiences to their children. One toy was presented each week and, at the end of that time, each parent filled out a questionnaire on the child's interest in the toy. To be kept as a part of the Parent/Child Course, a toy (or task) had to hold the interest of 80% of the children. Loss of interest because of mastery of the task did not count. In addition, during the week in which any given toy was presented, the child had to play with the toy more than five times, at least once without the parent suggesting it. Descriptions of toys, criteria for evaluation and a table of test results and decisions on the nine educational toys is included. PS 004 021 is another report in this series. (NH)

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AN EVALUATION OF NINE TOYS AND ACCOMPANYING LEARNING EPISODES IN THE RESPONSIVE MODEL PARENT/CHILD COMPONENT

Occasional Research Report Number 5

Education Beginning at Age Three

Far West Laboratory for Educational Research and Development

PS 004022

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OUTLINE OF CONTENTS

Introduction.....Page 1

I. Selection Procedure for Educational Products.....

A. Initial Screening.....Page 3 - 4

Definition of Learning Episode.....Page 3 - 4

Initial Screening Criteria.....Page 4 - 6

B. Preliminary Testing.....

Sites.....Page 7

Content Validity.....Page 7 - 8

Interest Criteria.....Page 9 - 11

Criterion One.....Page 11

Criterion Two.....Page 12

C. Performance Testing.....Page 12 - 13

D. Application to Other Contexts.....Page 13 - 16

II. Evaluation of Nine Toys and Associated Learning Episodes...

A. Sound Cans.....Page 17 - 18

B. Color Lotto.....Page 19 - 20

C. Feely Bag.....Page 21 - 22

D. Wooden Table Blocks.....Page 23 - 24

E. Stacking Squares.....Page 25 - 26

F. Number-ite.....Page 27 - 28

G. SIFO Shapes.....Page 29 - 30

H. Color Cubes.....Page 31 - 32

I. Flannel Board.....Page 33 - 34

J. Summary of Tests Results and Decisions.....Page 35

III. Appendix.....

A.....Page 36 - 39

B.....Page 40 - 41

The Laboratory was established through a Joint Powers Agreement in February 1966. Signatories as of June 1969 include:

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The Nevada State Board of Education
The Board of Regents of the University of Utah
The Utah State Board of Education

INTRODUCTION

The Far West Laboratory for Educational Research and Development has been developing and testing educational products for use by three- and four-year old children as part of its Responsive Model for young children. Each product is a toy or game accompanied by written instructions for its use in a "learning episode" or series of episodes designed to help children learn specific skills and concepts.

While the toys can be used in a variety of educational settings, one major situation in which they will be used and the context in which they were field tested is the Parent/Child Course (PCC). The PCC, consisting of ten weekly two-hour sessions, is designed to teach parents of three- and four-year old children some basic concepts about the development of their child's intellect and self-concept and to instruct parents in the use of toys and games which foster specific skills and concepts. A different toy or game and its associated learning episodes are demonstrated each week, and the parent is directed to take the toy home and use it with her child.

Here we describe the procedure used to decide whether each of the nine toys and their accompanying learning episodes is appropriate for use by young children in the Parent/Child context, and we indicate how similar procedures might be used to test toys for other contexts. Then we consider each of the nine toys and explain how the use of our procedure led us to accept six of the nine toys, some requiring some revision, and to reject three toys as inappropriate for use in the Parent/Child Course.

A related report discusses the success with which the developed toys and associated learning episodes have been incorporated into the Parent/Child Course. Another report concerns the degree to which the Parent/Child Course and the nine toys involved in it produce cognitive growth in children whose parents participate.

I. SELECTION PROCEDURE FOR EDUCATIONAL PRODUCTS

Our choice of criteria for selecting and testing toys and accompanying learning episodes was based throughout on the guidelines of the Responsive Model program. This program, called "Responsive" because it stresses responding to children rather than having them respond to you, posits that children learn at different rates and in different ways, but that all children learn best when they are interested in what they are doing. From these assumptions it follows that:

1. The learning activities should not depend upon rewards or punishments that are not a part of the learning experience itself.
2. The child should be free to explore the learning environment.
3. The child should set his own pace of learning.
4. Whenever possible, the child should be informed immediately about the consequences of his acts.
5. The environment should be arranged so the child is likely to make a series of interconnected discoveries about his physical and social world.[1]

On the basis of these five guidelines, we developed a list of screening criteria. The learning episode or episodes accompanying each toy had to substantially meet these criteria if the product was to be considered further for use by children in the Responsive Model program.

Products which passed this initial screening process were then subjected to preliminary testing. The Responsive Model stresses that children learn best when they are interested in what they are doing and therefore discourages forcing activities upon children. Thus, it was felt that the best way of evaluating the products was to measure the extent to which each holds the children's interest. Criteria for doing so were developed and applied to the nine products tested.

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[1] For further discussion of the premises and methods of the Responsive Model, see Nimnicht, G. P., etal, "The New Nursery School", General Learning Corporation, N. Y.

After the products which had proven in the preliminary testing to be incapable of sufficiently holding children's interest were revised, the nine toys and accompanying learning episodes were performance tested. The results of the performance tests were analyzed according to the interest criteria developed for the preliminary test. Finally, on the basis of both sets of tests, decisions are made as to whether to retain or discard each product.

Details of each phase of the selection procedure--initial screening, preliminary testing and performance testing--as it was applied to the nine toys and accompanying learning episodes we considered appear below. An indication of how similar procedures might be used with other toys and in other contexts also appears.

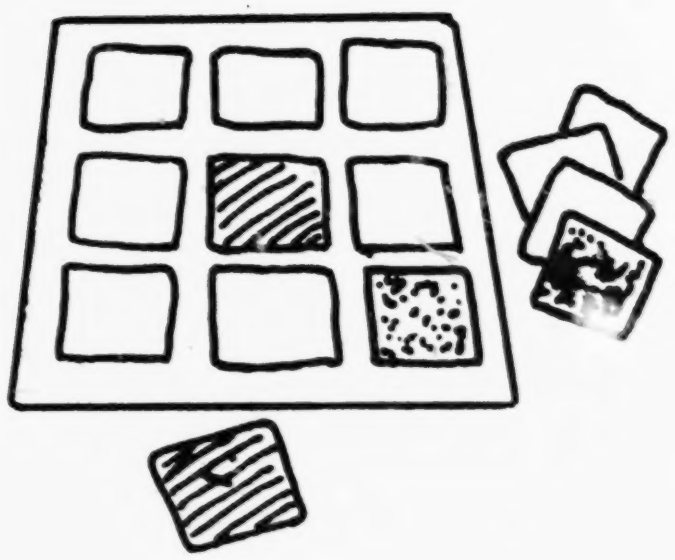
A. Initial Screening

Definition of a Learning Episode: A learning episode is a set of procedures to teach a basic skill or concept through the use of a toy especially developed for that purpose. The learning episodes or series of episodes accompanying each toy consists of one to three written pages, with illustrations, giving clear and specific instruction on the use of the toy.

One concept or a series of related concepts may be taught by the learning episodes accompanying each toy. For example, the Color Lotto game, a large square board divided into nine smaller squares each of a different color together with nine squares of the same size and colors as the smaller squares on the board, is accompanied by four learning episodes designed to teach a child progressively to:

1. become familiar with the materials;
2. develop visual discrimination and learn the term "same color";
3. associate a color name with the appropriate color and say the name of the color;

4. pick an object on the basis of its color name.[2]



Initial Screening Criteria: The criteria which the learning episode or episodes must substantially meet in order for the associated toy to be selected for development and testing are given in Table I. Examples given are from the Color Lotto episodes.

TABLE I

CRITERIA FOR INITIAL SCREENING OF LEARNING EPISODES

CRITERIA	EXAMPLE (COLOR LOTTO)
The learning episode:	
1. (a) has a clear statement of purpose.	Game 2: "To see if the child can name colors without seeing an example."
(b) specifies the materials to be used.	Game 1: "Color Lotto Board and one (1) set of colored squares."
(c) states the procedures to follow.	Game 2, (3). For example, "Say to your child, 'Find a square that is blue.' DO NOT show your child a blue square."

[2]See Appendix A, Page 36.

CRITERIA	EXAMPLE (COLOR LOTTO)
2. fits into a sequence of learning activities that proceeds as follows:	
(a) free exploration, while the adult observes.	Game 1: "Place the Lotto Board and one set (9) of the colored squares on a table or on the floor. Allow the child to play with them for a while."
(b) matching.	Game 1: "Find a square on your board that is red, the same color as this square."
(c) discrimination.	Game 2: "Find a square that is blue."
(d) problem solving or production.	None; other games with same toy being developed to involve problem solving.
3. fits into a second sequence of learning activities that proceeds from the concrete to the abstract:	
(a) real object.	Toy is a real object.
(b) model (may be omitted).	No.
(c) symbol.	No; doesn't ask child to show <u>other</u> objects of same color, for example.
4. deals with content which:	
(a) can be learned without distorting its meaning.	Yes.
(b) is immediately useful to the child and/or	Yes.
(c) is useful in building more complex concepts and/or	Yes; for example, color can combined with shape and size to teach more complex concepts.
(d) is useful in developing some problem-solving skill.	No; other games with same toy being developed to involve problem solving.

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CRITERIA	EXAMPLE (COLOR LOTTO)
5. will not have a negative effect on the child's self-image <u>and</u> scores 15 points or more on the following scale:	
(a) has a more direct effect on self-concept than that coming from increasing competence: 15	Score 0; does not, for example, use child's name or picture.
(b) begins or ends in a problem-solving situation: 10	Score 10; toy adapts to problem-solving situations.
(c) requires the continual involvement of the teacher: 0	Does not require continual presence of teacher.
requires the continual presence of an assistant or volunteer: 5	Does not require continual presence of adult.
allows the child to continue without an adult after introduction: 10	Game 1: Score 10; child can match colors without help.
is self-correcting for a child after introduction: 15	Is not self-correcting.

The episodes accompanying a toy must substantially meet criteria one through four and must score 15 points or more on criterion five for the toy to be accepted for development and testing. However, these criteria should not be applied rigidly: every episode accompanying a toy need not meet every part of criteria one through four for the toy to merit development; scoring on criteria five can be weighted according to the particular situation in which a toy is to be used. (See below D. <u>Application to Other Contexts</u>). In the end, the decision to accept a toy for development and testing must be a somewhat subjective one based on the analysis and assessment of the value of each of its accompanying episodes which the list of screening criteria provides and taking into account the context in which the toy is to be used.

B. Preliminary Testing

Sites: Preliminary field tests of nine toys whose accompanying episodes met the initial screening criteria were conducted in conjunction with two Parent/Child Courses. One course met at the Laboratory in Berkeley, California; ten parents of three- and four-year old children from the surrounding area began the course and eight completed it. The second course was held in East Palo Alto, California; here 35 parents of three- and four-year old children attended the first meeting and 23 completed the course. Both courses were taught by Laboratory personnel.

The same nine products were used in two other PCC's. However, in neither of these PCC's could the toys be evaluated effectively: one course had a very low level of attendance, and the other was designed to teach a set of parents to train other parents, so that the needs and goals of the participants were not the same as in the regular PCC. Nonetheless, informal reactions of the parents involved in these two courses helped us to develop our method of evaluation and to confirm our decisions on the appropriateness of each product.

Content Validity: Basic to the PCC concept is the premise that interaction between parents and their children through the use of toys and related learning episodes can both teach the child certain behaviors and help the parent to provide for the child an environment conducive to learning. The extent to which each toy substantiates this premise cannot be empirically tested. For one thing, it would be impractical to test both the child and the parent before and after playing with each toy. Secondly, it would be impossible to separate the effects of a few short games upon the learning of concepts which other experiences the child and parent are having during the same period may also teach.

We did test the children at the performance test site before and after the Parent/Child Course on the Responsive Test, an achievement test we have devised

especially for children in Responsive Model learning situations. These test scores indicated that the nine toys and associated games, taken together, improved the child's cognitive abilities; a separate report describes the test and the results achieved.

For the most part, however, evaluation of the extent to which each toy separately produces the results we desire must be based upon an analysis of its content validity--that is, the extent to which the content of the game is inherently consistent with the results it is supposed to produce. It is evident, for example, that playing any of the games associated with the nine toys requires the child to demonstrate the very skills and concepts the game is supposed to teach; thus, if the child plays the game he must learn the skills and concepts involved. Similarly, all of the games, to the extent they involve adult participation, require precise use of language in the interaction between parent and child; if both parent and child do not speak precisely the child will not be able to play the game. Finally, all the games are constructed so that the parent will, at the end of the game, know what behaviors the child is capable of performing; the learning episodes are written so that the parent must evaluate what behavior the child is capable of in order to continue playing with the child.

To be sure, we cannot guarantee that the behaviors learned by either parent or child will be used in everyday situations. Yet even if we could show that such behaviors are demonstrated after use of a given game, we could not be sure that the change in behavior was due to participation in the game. Thus, we must be satisfied with an analysis of each game's content validity for an evaluation of the actual learning which comes about because of the game. For the most part, games which satisfy the initial screening criteria will demonstrate content validity. The analysis above cooroborates that our nine toys, with their associated games, indeed demonstrate content validity.

Interest Criteria: If the child is only to engage in activities he is interested in, then he can learn from the concepts and skills inherent in an activity only to the extent that he remains interested in it. Thus, once we are satisfied that a product meets the initial screening criteria for products to be used in Responsive Model situations, and are also satisfied that the learning episodes accompanying a toy demonstrate content validity, only one criterion remains: if a product is to be acceptable in Responsive Model contexts, the child must be interested in the activities if offers.

Ideally, the exact criterion would be that the child persisted in the task for one or more sessions until he could play the game without error. However, in the PCC context, a precise enumeration of how the child fared with his task in each session is neither practical nor desirable; parents are not trained to make such observations objectively, and the very attempt to score the child's performance would disturb the rapport and communication between parent and child which the Course is meant to foster. Further, in no context would we be able to assume that if the expected behavior is shown, it is due solely to the effects of a specific toy.

Therefore, we must rely upon measures of the child's expressed interest in the toy. This is not a serious compromise; it is a legitimate developmental assumption that as long as a child remains interested in an activity he is learning from the experience. If the activity is too difficult the child will become frustrated and stop playing, while if it is too easy he will become bored and stop playing. For the purpose of evaluation, then, we posit that the child remains interested if, after five sessions of ten to twenty minutes each, he is willing to continue playing the game or if he remains interested until it is clear that he can play the game without error.

In accordance with this criterion of interest, we asked the parents in the PCCs to:

1. Ask the child to play the game on the first day. If he can understand the task well enough to undertake it, continue to play for twenty minutes or until the child indicates that he would like to stop.
2. Approach the child each day, when he is not engaged in another activity, and say, "We can play the game now." If the child refuses, do not ask him again that day. If he asks to play later in the day, play with him.
3. Repeat this for a least five days.

In the Parent/Child Course context, the information on whether the child continued his interest over five days or more had to come from parents. Each parent was asked at course meetings to complete a toy evaluation form on the toy used the previous week. (See Form B, Appendix B , Page 40).

This form asked each parent to report, among other things, the number of times her child played with the toy during the week, the number of times play was initiated by the parent, and whether or not her child lost interest in the toy by the end of the week and if so, why.

On the basis of this data, we developed two criteria for assessing the children's interest in each toy. These criteria appear in Table II.

Data from both sites was combined into one measure of each criterion, and a product was judged to be acceptable if it satisfied both of the criteria. If it did not satisfy both of the criteria, the product was considered to be of questionable interest value. In such a case, the product was revised before it was performance tested.

TABLE II

CRITERIA FOR ASSESSING CHILDREN'S INTEREST IN TOYS

AND ACCOMPANYING LEARNING EPISODES

INTEREST MEASURE	HOW DATA OBTAINED	ACCEPTABLE CRITERION
1. Percent of children who were still interested in the activity at the end of the week or who lost interest only because they mastered the activity.	From Parents' Toy Evaluation Form (Form B) Question 5	80% of the children were still interested in the activity at the end of the week or lost interest only because they mastered the activity.
2. Average number of times during one week each child played with the toy, and average number of times during one week each child played with the toy without being asked.	From Parents' Toy Evaluation Form (Form B) Questions 2 and 3	The average child played with the toy more than five times or played with the toy at least once without being asked.

Criterion One: The way criterion one is stated was intended not to lessen a product's acceptability on this criterion because children master the activities involving it and therefore lose interest. If a toy generates enough interest to bring about learning to a mastering level, we reasoned, it should not be rejected because children then lose interest. Further, the measures we developed for testing interest were merely devised in the expectation that, as turned out to be true, we could not in the majority of cases get information on whether the child maintained interest until he learned the skills and concepts taught by the game.

Data from the two sites was combined for criterion one by combining the raw data at the two sites. Thus, a toy met criterion one if 80% of the children at both sites were still interested in the activity at the end of the week or lost interest only because they mastered the activity. In some instances, a product

failed criterion one when only one site was considered but passed when the figures for the two sites were combined.

Criterion Two: In compiling data for criterion two, the average number of times during one week each child played with the toy spontaneously--without being asked to play by an adult--was the difference between the number of times the child actually played with the toy and the number of times the parent initiated the play (Question 3 - Question 2 on Form B). Clearly, the best test of whether a toy is interesting to a child is whether or not he plays with it spontaneously. But Responsive Model premises do not allow us to use a measure of spontaneous play exclusively, for the Model does not suggest that adults not present the child with learning opportunities. Rather, the Model suggests that we present learning activities but accept the child's decision as to whether or not to participate. Thus, we accepted one spontaneous play as exemplifying a high level of interest, but also accepted six or more playing periods as showing great eagerness to play.

For criterion two, we first compiled the mean number of times children at each site played with the toy in one week and played with the toys spontaneously. Then we computed the weighted mean value for the two sites combined.

C. Performance Testing

After two of the nine toys in the preliminary field test were revised because they failed both of the interest criteria, performance tests were carried out near Salt Lake City, Utah. A teacher from Salt Lake City was trained at the Laboratory in Berkeley for six weeks to present the Parent/Child Course, including the nine toys and associated learning episodes. Then she returned to Utah to give the course to parents in the Murray and Jordan School Districts in metropolitan Salt Lake City.

Fifteen parents participated in the Jordan program and 17 in the Murray program. They met twice rather than once weekly, for an hour at a time. Once each week they were asked to appraise the toy they had used that week on Form B, the same toy evaluation form used in the preliminary tests.

The data contained on these forms was compiled in the same way as it had been in the preliminary tests, and the same interest criteria were applied. Those toys which failed both of the interest criteria on the Performance Test were judged to be not interesting enough in the Parent/Child Course context and were therefore eliminated from the course. Data for toys which failed one of the two interest criteria was examined carefully to decide whether each toy merited revision and retesting. If the toy seemed to barely fail one criterion and met the second one easily, we decided to revise it or its learning episodes; if the toy, on the other hand, seriously failed one criterion and barely passed the other, we eliminated it from the Parent/Child Course.

For the most part, the results of the Performance Test coincided with those of the Preliminary Test: the three toys which did not meet both of our criteria on the Preliminary Test also failed to meet both of them on the Performance Test. Although two toys which had met both criteria on the Preliminary Test failed one of them on the Performance Test, each of these toys only barely failed that one criteria. Thus, the two sets of tests yielded substantially the same results, leading us to believe that the criteria we had used were valid and the test results reliable.

D. Application to Other Contexts

Having tested the nine toys evaluated in the Parent/Child Course context only, we cannot assume that the results of our tests will be applicable to other contexts as well. However, the criteria we set for accepting toys in the Parent/Child Course are probably more rigid than those one would set for any other

Responsive Model context. For example, a child in a classroom typically has many educational products available to him; therefore, a single product need not meet as many different educational goals as we demanded to be acceptable for inclusion in a Responsive Model classroom situation. In such a situation, then, we would apply the screening criteria more leniently. Similarly, there can be many more toys in a lending Toy Library than can be explained and provided to parent in a Parent/Child Course; each toy, then, need not prove interesting to as many children. Rather, we can include in a Toy Library toys which a few children find extremely interesting but some significant percentage of children are completely uninterested in.

Thus, acceptability in the Parent/Child Course is the most demanding test a toy can meet. We feel that toys acceptable in this context are also acceptable in any other Responsive Model situation.

The converse, however, is not true: toys unacceptable in the Parent/Child Course are certainly not unacceptable for all other Responsive Model contexts. Rather, such toys are probably acceptable in most other situations, since the criteria for accepting toys in such situations would be less stringent.

How, then, would one determine definitively whether toys rejected by the Parent/Child Course were acceptable in other situations? How would one decide if toys other than the nine toys we tested were acceptable in any given situation? It seems to us that our procedure could be used in either case with certain modifications, depending upon the situation for which the toy is intended:

a. as indicated above, the decision on whether to develop a toy and test it or not must be a subjective one based on the analysis provided by the list of screening criteria. In various situations different stress would be given to each criteria and parts of criteria. Criteria five on the list must especially be considered

differently in various contexts; this can be done by changing the points for the several aspects of the criteria.

For example, one of the goals of the Parent/Child Course is to foster meaningful interaction between parent and child. Therefore, a toy necessitating the continual presence of an assistant or volunteer--in this case, the parent--merits five points, while in a classroom situation, where an adult will not always be available, it might not merit any points.

b. the content validity analysis depends upon the premises of the situation in which a toy is to be used. Therefore, it should be briefly considered whether the toys being tested are inherently consistant with the goals of the context in which they are to be used.

c. while interest criteria would be the type used to evaluate toys in any situation, the exact criteria might change with the context. In a classroom situation, for example, many different educational products are available to the child. Therefore, we might ask the child to play each day but consider that he had lost interest if he refused to play two days in a row. We would assume that, if the child refused two days in a row, he had found something else he was interested in and which was similarly educationally beneficial. In the Parent/Child context, no such simple definition of losing interest was appropriate, so we had to use two bits of information instead of one.

On the other hand, we could retain the same measure of interest we used in the Parent/Child context and merely change the quantities demanded. Thus, we could say that to be acceptable in a Toy Library a toy must be still interesting at the end of the week, or interesting enough to bring about mastery of the activity, to 60% rather than

80% of the children who paly with it, while still demanding that the average child have played with the toy more than five times or once spontaneously.

II. EVALUATION OF NINE TOYS AND ASSOCIATED LEARNING EPISODES

In this section, we describe, in the order they were presented in the Parent/Child Course, each of the nine toys we tested. For each toy we provide an evaluation. As mentioned above, each of the toys was considered to substantially meet the initial screening criteria and to demonstrate content validity. Therefore, the toy evaluations concentrate on the test results, giving the test data in chart form and summarizing verbally the decisions we made regarding it. A summary table of the results and decisions on all nine toys appears at the end.

A. SOUND CANS

This toy co ises two sets of small, covered metal film cans; a set consists of six cans, e one of which has a different object or substance in it - e.g., water, a bead. hus each can in a set sounds different when it is shaken. One set is for the parent, the other for the child.

The toy is designed to teach the concept "same as" and to teach sound discrimination. To play it, the child is asked to pick the can from his set which sounds the same as the one his parent is shaking.

Evaluation: The Sound Cans toy met both of our criteria in the Preliminary Test. Therefore, it was retested in the same form in the Performance Test, where it again met both our criteria. We decided to accept it for inclusion in the Parent/Child Course.

(See reverse side for test data).

TEST DATA

CRITERION ONE: WERE 80% OF THE CHILDREN STILL INTERESTED IN THE ACTIVITY AT THE END OF THE WEEK OR NOT INTERESTED ONLY BECAUSE THEY HAD MASTERED THE ACTIVITY?

	Preliminary Test			Performance Test		
	Berk.[1]	EPA[2]	Both	Jordan	Murray	Both
Number of Children	10	16	26	13	17	30
Number lost interest before mastering	2	2	4	1	0	1
Percent lost interest before mastering	20%	13%	15%	7%	0	3%
Meets Criteria			Yes			Yes

CRITERION TWO: DID THE AVERAGE CHILD PLAY WITH THE TOY MORE THAN FIVE TIMES OR PLAY WITH IT AT LEAST ONCE SPONTANOUSLY?

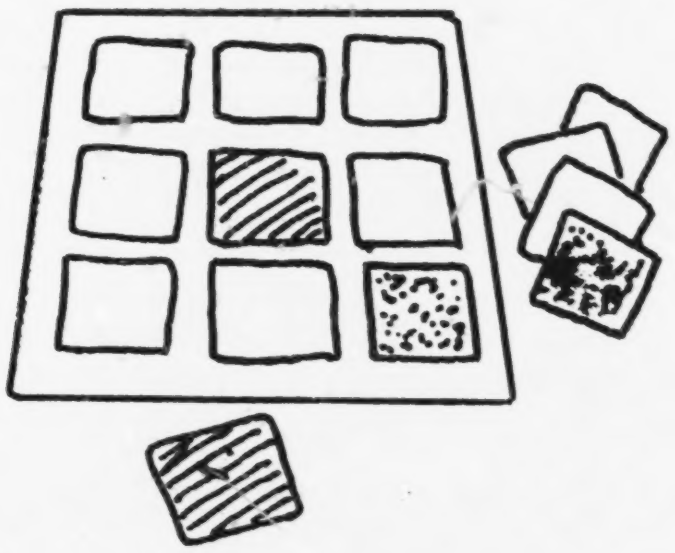
	Preliminary Test			Performance Test		
	Berk.[1]	EPA[2]	Both	Jordan	Murray	Both
Average No. of times child played	9	5	7	8	8	8
Average No. of Parent-Initiated plays	4	3	3	4	6	5
Average No. of Spontaneous Plays	5	2	4	4	2	3
Meets Criteria			Yes			Yes

[1] Berkeley
[2] East Palo Alto

B. COLOR LOTTO

This toy consists of a square wooden board, divided into nine differently colored squares, and two sets of nine small squares each. The small squares are the same size and colors as the small squares on the board. One set of small squares is for the parent, the other for the child.

The toy is designed to teach children the concept "same as", to teach color discrimination, and to teach the child to name colors. To play it, the child is asked first to find a square on the board the same color as one he is shown and later to find a square on the board which is the color his parent names. If he succeeds in the task given, he can cover the square on the board with a matching small square.



Evaluation: Color Lotto met both of our criteria in the Preliminary Test. Therefore, it was retested in the same form in the Performance Test, where it again met both our criteria. We decided to accept it for inclusion in the Parent/Child Course.

(See reverse side for test data).

TEST DATA

CRITERION ONE: WERE 80% OF THE CHILDREN STILL INTERESTED IN THE ACTIVITY AT THE END OF THE WEEK OR NOT INTERESTED ONLY BECAUSE THEY HAD MASTERED THE ACTIVITY?

	Preliminary Test			Performance Test		
	Berk.[1]	EPA[2]	Both	Jordan	Murray	Both
Number of Children	8	18	26	12	17	29
Number lost interest before mastering	1	2	3	1	2	3
Percent lost interest before mastering	12%	11%	12%	8%	12%	10%
Meets Criteria			Yes			Yes

CRITERION TWO: DID THE AVERAGE CHILD PLAY WITH THE TOY MORE THAN FIVE TIMES OR PLAY WITH IT AT LEAST ONCE SPONTANOUSLY?

	Preliminary Test			Performance Test		
	Berk.[1]	EPA[2]	Both	Jordan	Murray	Both
Average No. of times child played	4	5	5	10	7	8
Average No. of Parent-Initiated plays	4	3	3	5	4	4
Average No. of Spontaneous Plays	0	2	2	5	3	4
Meets Criteria			Yes			Yes

[1]Berkeley
[2]East Palo Alto

C. FEELY BAG

The Feely Bag toy is a drawstring bag and two sets of masonite cut-outs; each set consists of a circle, a square, a triangle, and a rectangle.

The toy is designed to teach a child to recognize shapes by sight and touch, and to teach him to extend a pattern. To play it, the child first is asked to find a shape in the bag the same as one he is shown; then he is asked to do the opposite--find a shape on the table the same as one in the bag. Finally, he is asked to identify which shape is missing when seven are laid out in a pattern, using the feel of the missing shape in the bag as a clue if he needs one.

Evaluation: The Feely Bag failed criteria one in the Preliminary Test. Therefore, it was revised before the Performance Test. The bag was made smaller and a slide set was devised to show parents how to use it. Nonetheless, it failed both the criteria in the Performance Test. We decided that the Feely Bag learning episodes were not interesting enough and should not be included in the Parent/Child Course.

(See reverse side for test data).

TEST DATA

CRITERION ONE: WERE 80% OF THE CHILDREN STILL INTERESTED IN THE ACTIVITY AT THE END OF THE WEEK OR NOT INTERESTED ONLY BECAUSE THEY HAD MASTERED THE ACTIVITY?

	Preliminary Test			Performance Test		
	Berk.[1]	EPA[2]	Both	Jordan	Murray	Both
Number of Children	10	15	25	13	11	24
Number lost interest before mastering	3	5	8	3	2	5
Percent lost interest before mastering	30%	33%	32%	23%	18%	21%
Meets Criteria			No			No

CRITERION TWO: DID THE AVERAGE CHILD PLAY WITH THE TOY MORE THAN FIVE TIMES OR PLAY WITH IT AT LEAST ONCE SPONTANOUSLY?

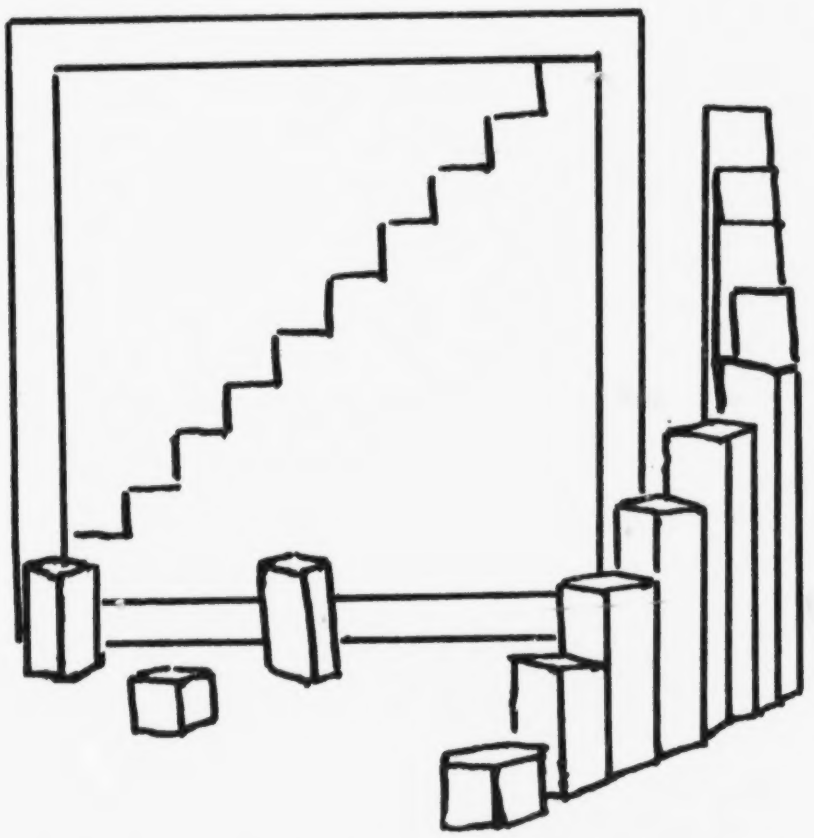
	Preliminary Test			Performance Test		
	Berk.[1]	EPA[2]	Both	Jordan	Murray	Both
Average No. of times child played	8	4	6	4	5	4
Average No. of Parent-Initiated plays	6	3	4	4	4	4
Average No. of Spontaneous Plays	2	1	2	0	1	0
Meets Criteria			Yes			No

[1]Berkeley
[2]East Palo Alto

D. WOODEN TABLE BLOCKS

This toy consists of wooden blocks in ten sizes; the largest is ten times as large as the smallest, and the others represent the units between one and ten.

The toy is designed to help the child learn size concepts--taller, shorter, tallest, shortest, middle, the same as--and to teach the concept "equal to". To play it, the child is asked to choose the tallest or shortest block among three of various sizes; then he is asked to find a block taller, shorter, or the same size as a given block. Finally he is asked to build a tower as tall as a given block using several smaller blocks.



Evaluation: The Wooden Table Blocks Toy met both of our interest criteria in the Preliminary Test. Therefore, it was retested in the same form in the Performance Test, where it again met both of our criteria. We decided to accept it for inclusion in the Parent/Child Course.

(See reverse side for test data).

TEST DATA

CRITERION ONE: WERE 80% OF THE CHILDREN STILL INTERESTED IN THE ACTIVITY AT THE END OF THE WEEK OR NOT INTERESTED ONLY BECAUSE THEY HAD MASTERED THE ACTIVITY?

	Preliminary Test			Performance Test		
	Berk.[1]	EPA[2]	Both	Jordan	Murray	Both
Number of Children	9	18	27	14	12	26
Number lost interest before mastering	1	4	5	2	0	2
Percent lost interest before mastering	11%	22%	19%	14%	0%	8%
Meets Criteria			Yes			Yes

CRITERION TWO: DID THE AVERAGE CHILD PLAY WITH THE TOY MORE THAN FIVE TIMES OR PLAY WITH IT AT LEAST ONCE SPONTANOUSLY?

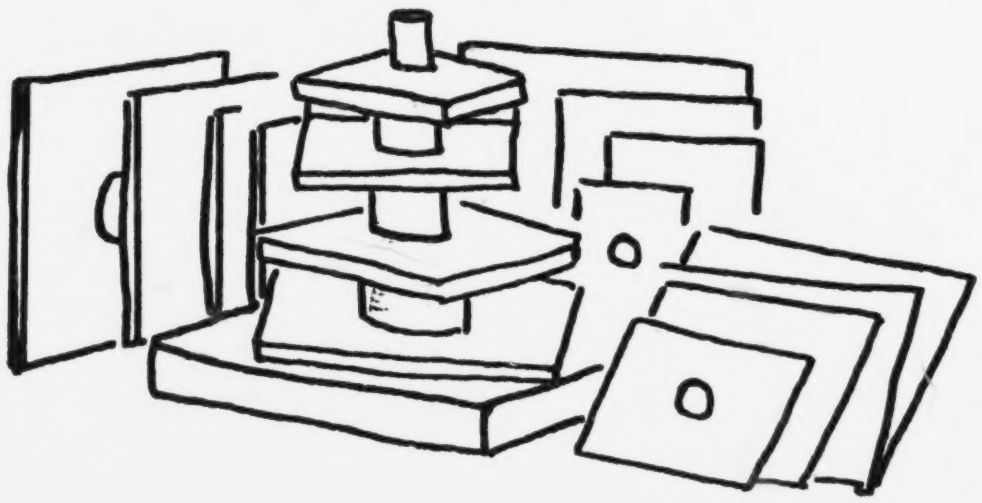
	Preliminary Test			Performance Test		
	Berk.[1]	EPA[2]	Both	Jordan	Murray	Both
Average No. of times child played	8	6	7	9	6	8
Average No. of Parent-Initiated plays	3	4	4	5	3	4
Average No. of Spontaneous Plays	5	2	3	4	3	4
Meets Criteria			Yes			Yes

[1]Berkeley
[2]East Palo Alto

E. STACKING SQUARES

This toy consists of sixteen wooden squares of four graduated sizes which fit on a wooden spindle. Of each size there is a blue, a yellow, a red, and a green square. The center holes of the squares are graduated with the size, and the spindle diameter is graduated likewise, so that the toy is self-correcting--i.e., if the squares are not stacked in graduated order, all the squares will not fit.

The toy is designed to teach the concepts "same" and "different" as applied to size and color, to teach color names, and to teach the child to recognize and extend patterns. To play, the child is first asked to find a square the same size as one he is shown; then he is asked to find a square the same color as one he is shown. Later, he is asked to find a square that does not belong (because it is a different color or size) in a group he is shown and to copy and extend patterns of squares.



Evaluation: The Stacking Squares toy met both of our interest criteria in the Preliminary Test. Therefore, it was retested in the same form in the Performance Test. It failed one of our criteria--criterion one--in the Performance Test, but by only 2.2%, and it easily met the criteria two. Since it did not fail both of our criteria, we decided to accept it for inclusion in the Parent/Child Course.

(See reverse side for test data).

TEST DATA

CRITERION ONE: WERE 80% OF THE CHILDREN STILL INTERESTED IN THE ACTIVITY AT THE END OF THE WEEK OR NOT INTERESTED ONLY BECAUSE THEY HAD MASTERED THE ACTIVITY?

	Preliminary Test			Performance Test		
	Berk.[1]	EPA[2]	Both	Jordan	Murray	Both
Number of Children	8	20	28	13	14	27
Number lost interest before mastering	2	3	5	5	1	6
Percent lost interest before mastering	25%	15%	18%	39%	7%	22%
Meets Criteria			Yes			No

CRITERION TWO: DID THE AVERAGE CHILD PLAY WITH THE TOY MORE THAN FIVE TIMES OR PLAY WITH IT AT LEAST ONCE SPONTANOUSLY?

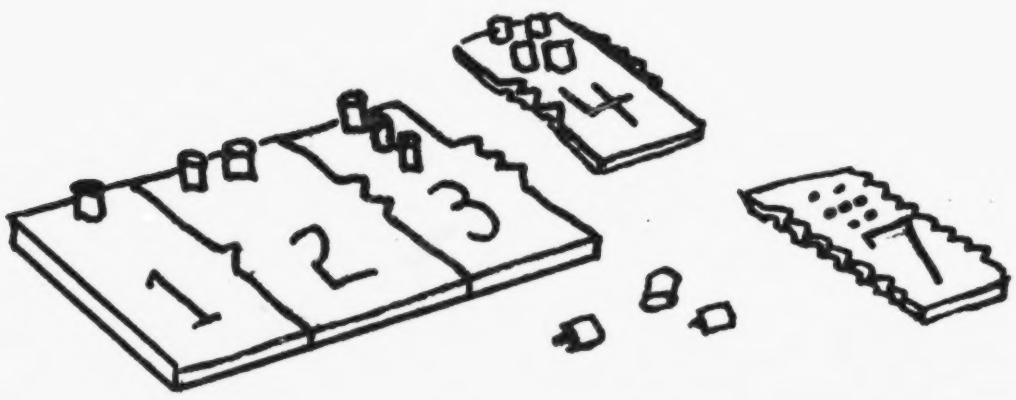
	Preliminary Test			Performance Test		
	Berk.[1]	EPA[2]	Both	Jordan	Murray	Both
Average No. of times child played	7	6	6	6	7	7
Average No. of Parent - Initiated plays	4	4	4	5	4	4
Average No. of Spontaneous Plays	3	2	2	1	3	3
Meets Criteria			Yes			Yes

[1] Berkeley
[2] East Palo Alto

F. NUMBER-ITE

This toy is a ten-piece masonite puzzle, each piece of which represents a number from one to ten. On each piece are peg holes corresponding to the number it represents, and the appropriate numeral; each piece is a rectangle with one fewer scallops on the left and the same number of scallops on the right as the number it depicts. The pieces fit together via the scallops and are thus self-correcting--i.e., they can only be put together in the right order. Pegs are provided for the holes so that the child has a clue to the number represented.

Number-ite is designed to teach the child to associate numberals with the number they represent and to teach the child to count. To play, the child is asked to count along with his parent the number of pegs on each piece. Then he is asked to select and name the pieces in sequence.



Evaluation: Number-ite met both of our interest criteria in the Preliminary Test. Therefore, it was retested in the same form in the Performance Test. It failed one of our criteria--criterion one--in the Performance Test but by only .8%, and it easily met criteria two. Since it did not fail both our criteria, we decided to accept it for inclusion in the Parent/Child Course.

(See reverse side for test data).

TEST DATA

CRITERION ONE: WERE 80% OF THE CHILDREN STILL INTERESTED IN THE ACTIVITY AT THE END OF THE WEEK OR NOT INTERESTED ONLY BECAUSE THEY HAD MASTERED THE ACTIVITY?

	Preliminary Test			Performance Test		
	Berk.[1]	EPA[2]	Both	Jordan	Murray	Both
Number of Children	9	2	11	12	12	24
Number lost interest before mastering	1	0	1	4	1	5
Percent lost interest before mastering	11%	0%	9%	33%	8%	21%
Meets Criteria			Yes			No

CRITERION TWO: DID THE AVERAGE CHILD PLAY WITH THE TOY MORE THAN FIVE TIMES OR PLAY WITH IT AT LEAST ONCE SPONTANOUSLY?

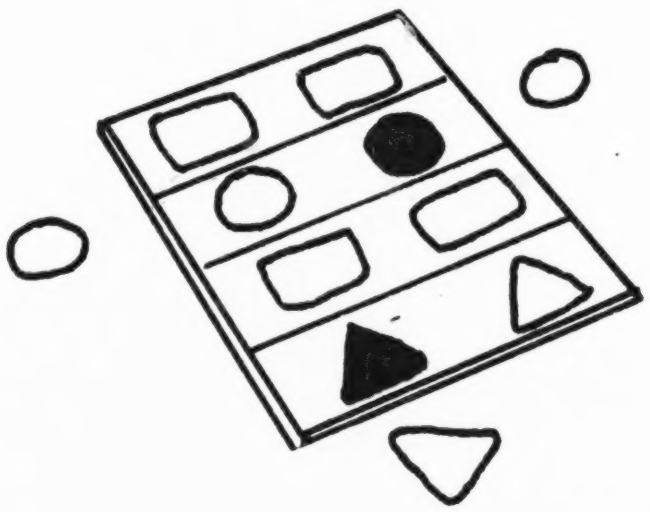
	Preliminary Test			Performance Test		
	Berk.[1]	EPA[2]	Both	Jordan	Murray	Both
Average No. of times child played	9	5	8	8	7	8
Average No. of Parent-Initiated plays	5	1	4	4	4	4
Average No. of Spontaneous Plays	4	4	4	4	3	4
Meets Criteria			Yes			Yes

[1]Berkeley
[2]East Palo Alto

G. SIFO SHAPES

This toy consists of a board into which fit eight puzzle pieces. The pieces consist of two each of four different shapes: circle, square, triangle, and rectangle. Each of the eight pieces is a different color, and the two pieces of each shape are the same size.

The SIFO Shapes toy is designed to teach the child to notice differences in shape and to identify shapes by shape name. To play the game, the child is asked to replace the pieces in the board and then to pick a shape on the basis of its shape name.



Evaluation: The SIFO Shapes Toy was used at the Preliminary Test sites, but no evaluation sheets were filled out on it. In the Performance Test it did not meet either of our criteria. Therefore, we decided not to include the learning episodes associated with it in the Parent/Child Course.

(See reverse side for test data).

TEST DATA

CRITERION ONE: WERE 80% OF THE CHILDREN STILL INTERESTED IN THE ACTIVITY AT THE END OF THE WEEK OR NOT INTERESTED ONLY BECAUSE THEY HAD MASTERED THE ACTIVITY?

	Preliminary Test[3]			Performance Test		
	Berk.[1]	EPA[2]	Both	Jordan	Murray	Both
Number of Children				11	14	25
Number lost interest before mastering				4	6	10
Percent lost interest before mastering				36%	43%	40%
Meets Criteria						No

CRITERION TWO: DID THE AVERAGE CHILD PLAY WITH THE TOY MORE THAN FIVE TIMES OR PLAY WITH IT AT LEAST ONCE SPONTANOUSLY?

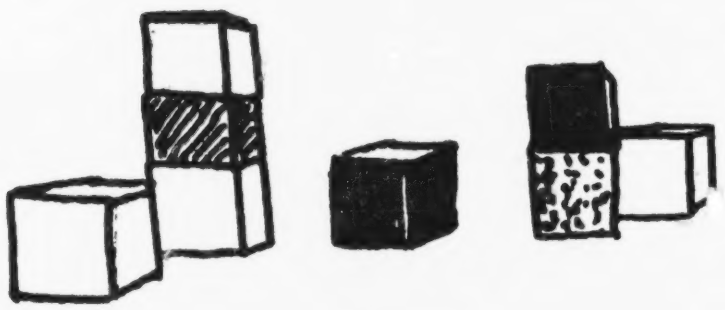
	Preliminary Test[3]			Performance Test		
	Berk.[1]	EPA[2]	Both	Jordan	Murray	Both
Average No. of times child played				6	5	5
Average No. of Parent - Initiated plays				5	5	5
Average No. of Spontaneous Plays				1	0	0
Meets Criteria						No

[1] Berkeley
[2] East Palo Alto
[3] No information, because Form B, Toy Evaluation Form, was not filled out by parents for this toy.

H. COLOR CUBES

This toy consists of small colored cubic blocks. Originally, there were twelve blocks, four each of three different colors.

The Color Cubes toy can be used to teach relative position concepts--above, below, beside, etc. It can also be used to teach a child to see a pattern and repeat or extend it. To play the game, the child is first asked to place the blocks according to directions he is given. Then he is asked to copy patterns he is shown and finally to extend patterns by adding the correct block or blocks.



Evaluation: The Color Cubes toy did not meet either of our criteria at the one Preliminary Test site where it was tried. (It was not part of the Parent/Child Course in East Palo Alto). Therefore, it was revised before the Performance Test: the number of cubes was changed to four each of five colors, and the learning episodes were rewritten to emphasize patterns even more. However, the toy still failed criterion one in the Performance Test and barely passed criterion two. Therefore, we decided not to include the Color Cubes toy in the Parent/Child Course.

(See reverse side for test data).

TEST DATA

CRITERION ONE: WERE 80% OF THE CHILDREN STILL INTERESTED IN THE ACTIVITY AT THE END OF THE WEEK OR NOT INTERESTED ONLY BECAUSE THEY HAD MASTERED THE ACTIVITY?

	Preliminary Test			Performance Test		
	Berk.[1]	EPA[2]	Both	Jordan	Murray	Both
Number of Children	7	--	7	13	13	26
Number lost interest before mastering	2	--	2	6	2	8
Percent lost interest before mastering	29%	--	29%	46%	15%	31%
Meets Criteria			No			No

CRITERION TWO: DID THE AVERAGE CHILD PLAY WITH THE TOY MORE THAN FIVE TIMES OR PLAY WITH IT AT LEAST ONCE SPONTANOUSLY?

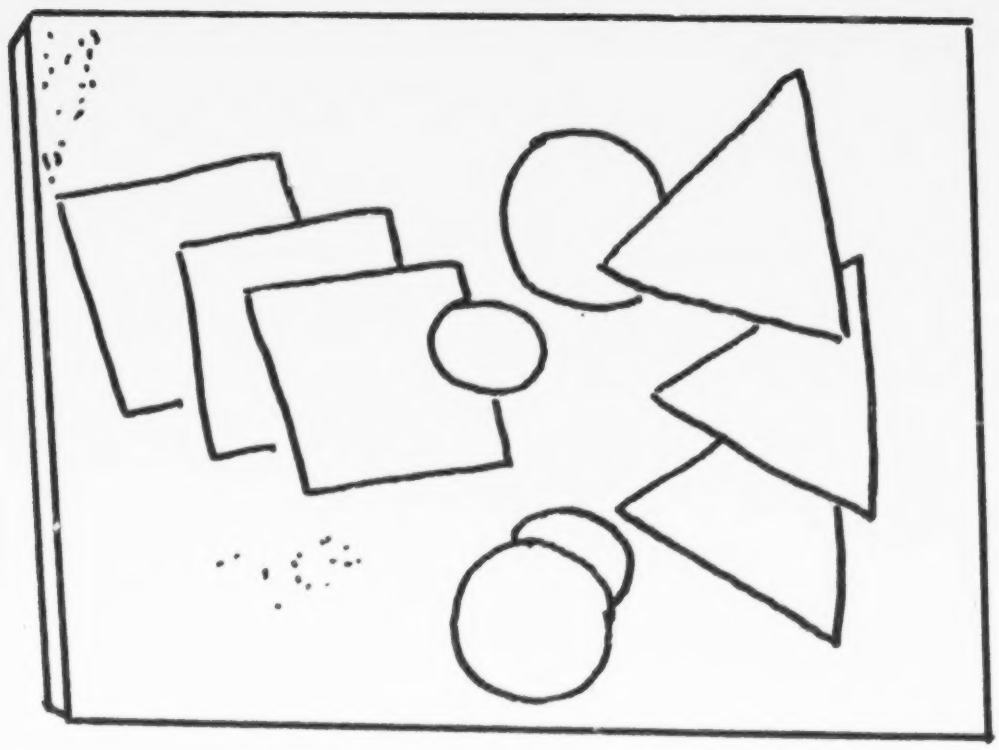
	Preliminary Test			Performance Test		
	Berk.[1]	EPA[2]	Both[3]	Jordan	Murray	Both
Average No. of times child played	5	--	5	4	5	5
Average No. of Parent Initiated plays	5	--	5	4	4	4
Average No. of Spontaneous Plays	0	--	0	0	1	1
Meets Criteria			No			Yes

[1] Berkeley
[2] East Palo Alto
[3] The Color Cubes toy was not part of the Parent/Child Course in East Palo Alto.

I. FLANNEL BOARD

This toy consists of a flannel board and 36 small felt shapes. There are circles, squares, and triangles; of each shape there are two sizes and of each size there are three colors--red, yellow, and blue. Thus, there are eighteen different combinations of size, color and shape, and two shapes in each combination.

The Flannel Board is designed to teach the child the concepts "same as" and "different than" as applied to shapes, sizes, and colors. To play, the child is asked first to choose the one felt piece that is not the same in shape as the other two of three he is shown. Then he is asked to choose the piece which differs in size from two others and the piece which differs in color from two others.



Evaluation: The Flannel Board toy met both of our interest criteria at the one Preliminary Test site where it was tested. (It was not part of the Parent/Child Course in East Palo Alto). Therefore, it was retested in the same form at the Performance Test, where it again met both of our interest criteria. We decided to accept it for inclusion in the Parent/Child Course.

(See reverse side for test data).

TEST DATA

CRITERION ONE: WERE 80% OF THE CHILDREN STILL INTERESTED IN THE ACTIVITY AT THE END OF THE WEEK OR NOT INTERESTED ONLY BECAUSE THEY HAD MASTERED THE ACTIVITY?

	Preliminary Test[3]			Performance Test		
	Berk.[1]	EPA[2]	Both	Jordan	Murray	Both
Number of Children	7	--	7	14	14	28
Number lost interest before mastering	1	--	1	0	0	0
Percent lost interest before mastering	14%	--	14%	0%	0%	0%
Meets Criteria			Yes			Yes

CRITERION TWO: DID THE AVERAGE CHILD PLAY WITH THE TOY MORE THAN FIVE TIMES OR PLAY WITH IT AT LEAST ONCE SPONTANOUSLY?

	Preliminary Test[3]			Performance Test		
	Berk.[1]	EPA[2]	Both	Jordan	Murray	Both
Average No. of times child played	6	--	6	8	7	8
Average No. of Parent - Initiated plays	4	--	4	4	5	5
Average No. of Spontaneous Plays	2	--	2	4	2	3
Meets Criteria			Yes			Yes

[1] Berkeley
[2] East Palo Alto
[3] The Flannel Board toy was not part of the Parent/Child Course in East Palo Alto.

J: SUMMARY OF TEST RESULTS AND DECISIONS ON NINE EDUCATIONAL PRODUCTS FOR PARENT/CHILD COURSE[1]

	Preliminary Test			Performance Test		Final Decision
	1: Keep Interest	2: Play Often	Decision	1: Keep Interest	2: Play Often	
Sound Cans	Yes	Yes	Retain	Yes	Yes	Include
Color Lotto	Yes	Yes	Retain	Yes	Yes	Include
Feely Bag	No	Yes	Revise	No	No	Reject
Wooden Table Blocks	Yes	Yes	Retain	Yes	Yes	Include
Stacking Squares	Yes	Yes	Retain	No	Yes	Revise
Number-ite	Yes	Yes	Retain	No	Yes	Revise
SIFO Shapes[2]	---	---	---	No	No	Reject
Color Cubes	No	No	Revise	No	Yes	Reject
Flannel Board	Yes	Yes	Retain	Yes	Yes	Include

[1]Decisions to include or revise apply to other Responsive Model context; decisions to reject apply only to Parent/Child Course (See D. Application to Other Contexts, above).

[2]The SIFO Shapes Toy was not evaluated at Preliminary Test sites.

NFR/ck
6/19/70

EQUIPMENT: Color lotto board and two (2) sets of colored squares (one set for the parent and one for the child).

APPENDIX A

Color Lotto Learning Episodes

COLOR LOTTO
Game 1

PURPOSE: TO TEACH CHILD TO SEE DIFFERENT AND SAME COLORS.

GENERAL INSTRUCTIONS:

A. The child may change the rules of the game at any time.....the parent must follow the child's lead.

B. The game should be ended when the child seems to lose interest.

SPECIFIC INSTRUCTIONS

1. Place the lotto board and one set (9) of the colored squares on a table or on the floor.
2. Allow the child to play with them for a while.
3. Collect all of the child's squares and place them in front of you.
4. Hold up a colored square (for example a red square) and say, "Find a square on your board that is red, the same color as this square.

(IF CHOOSES DIFFERENT) If the child points to a square of a different color, move the square you are holding close to his board so the child can see the difference. Wait a few seconds. If the child does not correct himself say, "These two squares are not the same color. Try again".

(IF CHOOSES SAME) If the child points to the square that is the same color, give him the square you are holding and say, "Yes, these two squares are the same color. They are both red. You may put this red one on your board."

Then hold up a blue square and say, "Find a square on your board that is blue, the same color as this square."

If the child points to a square of a different color, move the square you are holding close to his board so the child can see the difference. Wait a few seconds. If the child does not correct himself say, "These

two squares are not the same color. Try again."

If the child points to the square that is the same color, give him the square you are holding and say, "Yes, these two squares are the same color. They are both blue. You may put this blue one on your board."

Continue the game until all the squares on child's board are covered or the child loses interest.

6. To have your child remove his squares, pick up a colored square from your set (the parent's set) and say, "Take off a square that is YELLOW, the same color as the square I am holding."

(IF CHOOSES DIFFERENT)

a. If your child picks up a square of a different color, place it next to your square so the child can see the difference. Wait a few seconds. If the child does not correct himself, say, "These 2 squares are not the same color. Try again."

(IF CHOOSES SAME)

b. If the child picks up a square that is the same color, take the child's square and say, "Yes, these 2 squares are both yellow."

After the child removes the yellow square say,"Take off a square that is green, the same color as the square I am holding."

If your child picks up a square of a different color, place it next to your square so the child can see the difference. Wait a few seconds. If the child does not correct himself say, "These 2 squares are not the same color. Try again."

If the child picks up a square that is the same color, take the child's square and say, "Yes, these 2 squares are both green."

Continue the game until all squares are taken off the child's board or until the child loses interest.

EQUIPMENT: Color lotto board and one (1) set of colored squares.

COLOR LOTTO
Game 2

PURPOSE: To see if child can name colors without seeing an example.

GENERAL INSTRUCTIONS:

A. The child may change the rules of the game at any time.....the parent must follow the child's lead.

B. The game should be ended when the child seems to lose interest.

SPECIFIC INSTRUCTIONS:

1. After the child has been successful with the first color lotto game, introduce this game.
2. Place the lotto board in front of the child. The parent should have one set of colored squares.
3. Say to your child, "Find a square that is blue." DO NOT show your child a blue square. If the child points to a square of a different color, pick up a blue square and say,"Find a square that is blue, the same color as this square." If the child makes 2 or 3 similar mistakes, go back to Game 1.

   If the child points to the blue square, hand him a blue square and say, "What color is this square?" If the child does not answer say, "This square is blue."

   Continue the game until all the squares on the child's board are covered. To remove squares from lotto board, follow directions in Game 1 except do not show the child the square. For example say, "Take off a square that is blue."

APPENDIX B Form B Course End Evaluation

FORM B INDIVIDUAL TOY EVALUATION

Today's date _____

School District _____

Group Number _____

Name of Toy _____

The following questions are being asked to get your reactions to how well each toy is performing. Your comments will not only help us evaluate each toy but your suggestions can contribute to the development of this program. Please fill out this form for either your 3- or 4-year-old child. Also, do not put your name on this form.

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